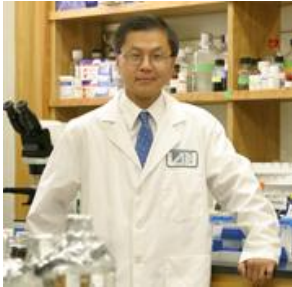


## Avant-Garde Awardees

### 2011 NIDA Avant-Garde Award Program for HIV/AIDS Research



**Awardee: David D. Ho, M.D.** is Senior Physician, Irene Diamond Professor, The Rockefeller University and Scientific Director and Chief Executive Officer of the Aaron Diamond AIDS Research Center. Dr. Ho has made seminal contributions to HIV/AIDS research and is an outstanding physician-scientist. In 1996, Dr. Ho's leadership in the HIV/AIDS field was recognized by Time Magazine's naming him "Man of the Year."

**Project: Monthly Antiretroviral Therapy Using Multispecific HIV Neutralizing Antibodies:**

Combination antiretroviral therapy consisting of orally administered, anti-HIV medications taken daily has revolutionized the treatment of HIV/AIDS. However, treatment failures continue to occur in a significant fraction of those treated, often due to incomplete patient adherence to the prescribed regimen. Dr. Ho

aims to develop a revolutionary HIV therapy—with particular relevance for drug users who struggle with adherence—bi-specific or tri-specific antibody-like molecules that could be administered monthly. A once-a-month treatment would improve the feasibility of directly observed therapy, an evidence-based adherence intervention. Antibodies are not only well tolerated and have an excellent safety record, but can also be administered infrequently because of their long half-life. This research program has the potential to lead to the next generation of medications to treat HIV; medications that could dramatically increase patient adherence and lead to decreased treatment failures and better clinical outcomes.

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### 2010 NIDA Avant-Garde Award Program for HIV/AIDS Research



**Awardee: Eric M. Verdin, M.D.**, is a senior investigator and associate director of the Gladstone Institute of Virology and Immunology and professor of medicine at the University of California, San Francisco. Research in his laboratory focuses on the mechanism of HIV transcription.

**Project: Novel Model for HIV Latency in Primary Memory T Cells:** The long-term persistence of HIV in a latent state in patients treated with HAART prevents the eradication of the disease and forces patients to remain on HAART for their entire life. At this time, our understanding of how latent HIV infection occurs is basic. Dr. Verdin's project aims to develop a new single-cell technology to examine how HIV latency is established and maintained, and how the virus becomes reactivated, in primary human lymphoid cells. By

observing the fate of the virus in single cells, Dr. Verdin hopes to be able to devise novel strategies to eliminate latent HIV infection, or to restrict the latent pool to a size that can be controlled by the immune system.

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### 2009 NIDA Avant-Garde Award Program for HIV/AIDS Research



**Awardee: Benjamin K. Chen, M.D., Ph.D.**, assistant professor in the Department of Infectious Diseases at Mount Sinai School of Medicine, New York, is an investigator of exceptional vision and promise. He developed a methodology that enables visualization of fluorescently tagged HIV virus particles that may answer long-standing questions about cell-cell mechanisms of viral transmission.

**Project: Imaging Virological Synapses During Parenteral HIV Transmission:** The understanding of how the HIV virus spreads among injection drug users is limited by a poor understanding of the first events that occur following HIV transmission. This research uses sensitive virus tagging approaches and mouse models with humanized immune systems to study the sequence of interactions between HIV-infected cells and

uninfected cells. These studies may lead to the development of vaccines or other preventive approaches to inhibit these initial interactions that occur during intravenous transmission.

## Avant-Garde Awardees



**Awardee: Dana H. Gabuzda, M.D.**, is a professor of neurology (microbiology) at the Dana Farber Cancer Institute and Harvard Medical School, in Boston. She is a leading researcher in the areas of HIV molecular biology and pathogenesis, particularly neuropathogenesis. Her cutting-edge research has significantly increased understanding of HIV replication and pathogenesis.

**Project: Systems Biology of Immune Reconstitution in HIV/AIDS:** A major challenge in HIV research is to restore immune function in HIV-infected individuals. HIV infection depletes CD4 T cells, leading to immunodeficiency and death. Highly active antiretroviral therapy (HAART) restores CD4 T cell counts to normal levels in a majority of individuals who achieve suppression of HIV to undetectable levels. However, the magnitude of CD4 T cell recovery is variable, and many people on HAART have poor CD4 T cell recovery. The research will lead to a better understanding of the mechanisms that determine CD4 T cell restoration in IV drug abusers and other populations infected with HIV, and may identify new therapeutic strategies to improve restoration of immune function in these populations.



**Awardee: Jonathan Karn, Ph.D.**, is a professor and chairman of molecular biology and microbiology at Case Western Reserve University, in Cleveland. He is a creative molecular biologist whose research on novel therapeutic technologies could have an impact on the HIV/AIDS epidemic worldwide.

**Project: Manipulating Epigenetic Control Mechanisms to Control HIV Transcription:** Most individuals treated with antiretroviral drugs have little to no detectable HIV in their blood; however, this does not mean that the virus has been cleared from the body. Unfortunately, the virus can reemerge, leading to renewed active infections when treatment stops or fails. This research will focus on finding natural mechanisms that could block HIV replication and provide long-lasting suppression of HIV.



**Awardee: Rafick-Pierre Sekaly, Ph.D.**, co-director and scientific director of the Vaccine and Gene Therapy Institute in Port St. Lucie, Fla., is an internationally recognized leader in the field of human immunology and translational medicine, specifically the immune response to HIV infection.

**Project: Novel Concepts for the Eradication of HIV:** The HIV-1 reservoir is a small pool of persistent long-lived and latently infected resting memory CD4 T cells. Eradication of this HIV reservoir is one of the last steps to be conquered in order to develop a cure for this disease. Dr. Sekaly's research will probe for a mechanism explaining the existence of HIV reservoirs. His studies of pathways that can be targeted to purge HIV from its reservoir could ultimately lead to novel immunological interventions for the treatment of HIV.

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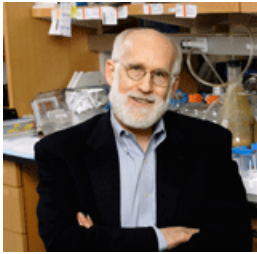
## 2008 NIDA Avant-Garde Award Program for HIV/AIDS Research



**Awardee: Ileana Cristea, Ph.D.**, assistant professor in the Department of Molecular Biology at Princeton University, Princeton, N.J., is a young investigator of exceptional talent and promise whose research creatively applies technology to address significant biological issues. She developed a methodology that allows tracking of protein localization and elucidation of interacting partners. Dr. Cristea applied this technology first to study the virus–host interactions for Sindbis fever (caused by a mosquito-borne virus) and has extended this technology to the study of other virus–host interactions, including human cytomegalovirus and HIV.

**Project: Proteomic tools to uncover the role of chromatin remodeling in HIV-1 infection:** The HIV virus contains relatively little genetic information. Therefore, it usurps much of the host's cellular machinery for its own purposes. This study focuses on HIV's ability to hijack key proteins involved in the regulation of gene expression. A strength of this proposal is its unique ability to perform a comprehensive screen of interactions between viral and host proteins.

## Avant-Garde Awardees



**Awardee: Jerome Groopman, M.D.**, professor of medicine, Dina and Raphael Recanati Chair at the Harvard Medical School and Chief, Division of Experimental Medicine at the Beth Israel Deaconess Medical Center in Boston. Dr. Groopman's research focuses on basic mechanisms of hematopoiesis, cancer, and HIV/AIDS. He is a renowned translational physician-scientist whose research provided key information on hematological abnormalities in AIDS patients early in the HIV/AIDS epidemic. He studied how HIV elicits immune responses suppressive of marrow stem cell replication and maturation and also conducted the first clinical trials demonstrating that colony-stimulating factors could restore cell number and function.

**Project: Inhibition of HIV at the Immune Synapse Utilizing Novel Ligands and Receptors:** Cells of the immune system form complexes (the immune synapse) that are very efficient at passing HIV to uninfected cells. This study seeks to develop agents that will block virus propagation from the immune synapse. This project has the potential to develop new therapeutics that block movement of HIV-infected cells throughout the lymphatic system.



**Awardee: Julio Montaner, M.D.**, professor of medicine at the University of British Columbia and Head, Division of AIDS Canada; Director, British Columbia Centre for Excellence in HIV/AIDS, Providence Health Care; adjunct professor, Department of Psychiatry, University of California, San Diego. Dr. Montaner studies the role of HAART (Highly Active Antiretroviral Treatment) as HIV prevention at a population level. Immediate past president of the International AIDS Society, Dr. Montaner is a highly regarded HIV/AIDS clinician who performed pioneering work on the development of HAART therapy. He is now directing more of his research focus on HIV prevention.

**Project: Seek and Treat for Optimal Outcomes and Prevention in HIV & AIDS in IDUs:** Preliminary evidence suggests that expanded HAART coverage among injection drug users will decrease new HIV infections within the population, including but not restricted to injection drug users. This project will test the existing evidence. If successful, it could lead to decreased sickness, death, and hospital utilization by injection drug users. The project's results could have dramatic consequences for the control of the HIV epidemic around the world.